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ABSTRACT

The following hypotheses were tested in this study: (1) boys and girls have an even start at school entrance, but boys' performance and adjustment decline relative to girls by the end of third grade; (2) boys do not attach themselves to school and school tasks with positive affect as much as girls; and (3) thus, the factors related to achievement at the end of third grade are different for the sexes, as are the relationships of third-grade achievement to kindergarten entrance variables. Data were examined for white boys and girls of a cohort of 300 children tested at their entrance into kindergarten in 1970, and at the end of third grade in 1974. Measurements for the children at both points included tests of cognitive ability, social-emotional variables and achievement, as well as educational advantage level of the home environment. The analyses of the data from this sample indicated that each of the hypotheses was supported to some extent. There were indications of an even start and of decline in some measurements of boys relative to girls in achievement and adjustment during the early school years. For girls, both affective and cognitive measures at the end of third grade were positively correlated with achievement, while for boys only the cognitive measure was so related. However, it was with boys, not girls, that third grade achievement showed many positive correlations with kindergarten entrance variables. (Author/MP)

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SEX DIFFERENCES IN FACTORS RELATED TO EARLY SCHOOL ACHIEVEMENT

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Abstract

Sex Differences in Factors Related to Early School Achievement

This is a study of differences between boys and girls in school experience in the early school years. The fit is better for girls than boys of both their perceptual motor abilities and their sex role with learning tasks and behavioral demands at school. This better fit for girls takes on added importance in the developmental theory of Erikson: the crisis at the early-elementary-school period revolves around gaining a feeling of accomplishment and avoiding inferiority. Following from that approach these hypotheses were proposed: that boys and girls have an even start at school entrance, but that boys' performance and adjustment decline relative to girls by the end of third grade. Boys do not attach themselves to school and school tasks with positive affect as much as girls. Thus, the factors related to achievement at the end of third grade are different for the sexes, as are the relationships of third-grade achievement to kindergarten entrance variables. Data were examined for white boys and girls of a cohort of children tested at their entrance into kindergarten in 1970, and at the end of third grade in 1974. Measurements for the 300 children at both points included tests of cognitive ability, social-emotional variables and achievement, as well as educational advantage level of the home environment. The analyses of the data from this sample indicated that each of the hypotheses was supported to some extent. There were indications of an even start and of decline in some measurements of boys relative to girls in achievement and adjustment during the early school years. For girls, both affective and cognitive measures at the end of third grade were positively correlated with achievement, while for boys only the cognitive

measure was so related. It was with boys, not girls, that third grade achievement showed many positive correlations with kindergarten entrance variables. The interpretation offered for the latter findings was that possibly girls' greater success helped bring about supports at school for achievement, while, lacking such school supports, boys' achievement at third grade level continued to be dependent upon the level of advantage of various factors at kindergarten entrance. Specific needs for further investigation are indicated.

How different is the experience of the early years of school for boys and girls? Various differences between the sexes at school are generally accepted by educators, one important one being the fact that boys have reading problems more frequently than girls. To conduct research in order to explore systematically the relevant sex differences would seem to be central to making progress on a major social problem, children's failure to learn at school. Yet, as McGuinness has observed in an article in Human Nature (1979), there seems to be a "conspiracy of silence" regarding the issue. McGuinness is one who has conducted careful research into questions relevant to how boys differ from girls at school tasks. The present study represents another attempt to break this "conspiracy of silence." The questions to be explored in this article are: Does boys' achievement and adjustment at school actually decline relative to girls' between school entrance and the end of third grade? Do there appear to be different supports for successful achievements? That is, does the pattern of factors positively correlated with achievement in the early school years differ for boys and girls?

Background and Purpose: First, let us look at some of the existing knowledge regarding differences between the sexes in school achievement.

The extent of achievement differences between boys and girls has been documented for many years. The national sample of over 7,000 elementary-school-aged children studied in the Health Examination Survey in the mid-sixties included the Wide Range tests of achievement in reading

and arithmetic (NCHS, 1970). Achievement scores of girls were higher than boys at all age levels between 6 and 11 years of age. The differences at the second and third grade levels were large enough to be statistically significant (p.6). For arithmetic "the mean scores obtained by the boys were only negligibly lower, by less than one point, from those for girls throughout the age range." (p.8) Nevertheless, note that they were lower.

Similarly, that survey of children between 6 and 11 years of age produced evidence that boys at school experience failure more frequently, and more often are seen as having a problem, than girls (NCHS, 1976). 19% of the boys had repeated a grade, compared to only 11% of girls (p.21). Special resources had been recommended "for some type of problem" for 34% of boys vs 25% of girls. When the types of problems were identified, 15% of boys vs 10% of girls had been identified as "slow learners," 1.7% of boys vs .07 of girls as "mentally retarded," and 4.4% of boys vs 2.2% of girls as "emotionally disturbed." In contrast, the groups were apart by only 0.1% for such problems as vision, hearing or orthopedic handicaps (p.23).

Matters seem to have become even worse in the dozen years since those data were collected. In her recent article, McGuinness referred to the fact that boys "fill remedial reading classes, don't learn to spell and are classified as dyslexic or learning disabled four times as often as girls (1979, p.92)."

In that article, McGuinness described different performances by boys in several factors closely related to school tasks. Among these are sensory perception, fine-motor skills, language behavior, and length of time spent at any one activity. The connections between all of these and reading and writing, the predominant skills called for in elementary school classrooms,

are obvious. Even in a subject area where boys' sensory-motor equipment appears superior, namely mathematics, the schoolroom approach typically remains at odds with rather than in tune with boys' responses.

Lee and Voivodas have taken a different approach: comparison of the behaviors of the two sexes at school for the fit between sex role and pupil role (1978). In their article, research is assembled from several different sources demonstrating the fact that from nursery school onward, there is congruence in the two roles for girls, but conflict for boys: i.e., for a boy to succeed at one role may mean he is on his way to failure in the other.

The data available for the analyses performed in the present study made it possible to examine the performances of the two sexes separately at the beginning and end of their first four years of school for a cohort which numbered approximately 300 children, in all. Assessment instruments both "before" and "after" were used to measure cognitive ability, affective factors and "academic" achievement, as well as educational advantage in the home environment (a rather elaborate measure of socio-economic status). Thus it was possible to compare the progress at school of the sexes over the early school years and to obtain correlations of these various factors for the sexes separately to make a preliminary inquiry into the extent to which the factors which accompany early school achievement for girls are the same, or different, for boys.

Previous investigation by the author involving morbidity and mortality rates had led to the liklihood that each of the sex-race groups (white male, white female, black male, black female) may have its own characteristic

pattern (Landsberger, 1979). Because of this it was decided to examine sex differences holding racial group constant. Not only is the number larger for the sex groups among white children in the data set, but in the sample, the sexes among blacks are not comparable on socio-economic status. For these reasons, the study is confined to white children.

Low achievement and failure to learn on the part of children at school is a problem of increasing concern throughout the U.S. This problem is on the increase despite our spending more money on education now than ever before. The move on the part of more than half of the states to conduct "competency tests" to be sure that children have learned at least basic skills before obtaining a high school diploma is an outward sign of widespread inward doubt. It is clear that if we knew how to combat the problem of low school achievement, we would have done so and the problem would not exist. Perhaps we still have failed to acknowledge the complexities involved, including the possibility that there are differences between the sexes in many factors responsible for achievement as well as differences in their levels of achievement.

No causation of low achievement can be established by this correlational study. It is proposed that to find that achievement appears to be related to different factors for boys than for girls may lead to a clearer conceptualization of the process involved and thus eventually to efficacious interventions.

Theoretical Framework

The theoretical framework for this study of differences between the sexes in factors related to achievement in the school environment derives

in part from the points already mentioned in references to the McGuinness and the Lee and Voivodas articles.

The differences in biology underlying differences in the way boys and girls respond in school, described so clearly and extensively by McGuinness, logically lead to differences in approach and avoidance of school tasks and task-masters. Approach is added to for girl-as-pupil by reinforcement from doing well in her role of girl in society in general. Avoidance by boy-as-pupil is reinforced from the conflict with his role of boy in society, as Lee and Voivodas have argued.

More success for girls vs more failure for boys in early school years takes on special importance in the venerable theory of development of Erik Erikson (1950). It is at this point in the course of development as formulated by Erikson where individuals encounter the crisis of "a sense of accomplishment" vs "a sense of inferiority."

Just at this juncture, children find themselves with a whole new scene as they enter a school, be it kindergarten or first grade. The child moves away from home and family control for a major part of his life space and enters an environment full of peer group members ("standards for comparison") and a few new adults in powerful positions. The new environment abounds in new constraints and new opportunities.

It is of utmost importance, says Erikson, that at this developmental stage an individual feel a sense of accomplishment and avoid a sense of inferiority. Thus, the child draws near to certain settings or distances (him)(her)self from certain settings accordingly. Among other results of moving toward or away from will be further variations in

achievement in the obvious directions, since the pupil must move toward a lesson and actually engage himself in a task in order to learn it.

At school, then individuals "play out" the experiences which result either more or less in a resolution of their "accomplishment-inferiority crisis." Progress toward what Erikson posits as the long-term goal of integration vs diffusion of personality depends upon the successful resolution of this developmental crisis along with the crises which precede and follow. In present day idiom, integration is expressed as "getting the act together."

The propositions of McGuinness and Lee and Voivodas regarding the poor fit between boys and school tasks and role requirements, and the good fit for girls, seen against Erikson's formulations have led this researcher to conceptualize a more or less equal performance at school entrance for boys and girls, followed by a distancing and decline in school achievement and indications of emotional adjustment for boys, with just the opposite for girls: increased approach toward school and increased academic achievement and social-emotional adjustment indices. The possibility exists for girls to have integrated various aspects of personality with achievement after a few years of school to a greater extent than boys.

Hypotheses: The data available for analysis in this study make possible the testing of the following hypotheses which follow from the theoretical position as stated:

1. Achievement level of boys at beginning of kindergarten does not differ from that of girls, but boys' achievement will have declined relative to girls' by the end of third grade.

2. Affective measures indicative of satisfactory adjustment at school do not differ for boys and girls at school entrance, but girls' scores will be higher than boys' by the end of third grade.

3. Measures of different aspects of personality and behavior -- cognitive ability and affective factors -- at the end of the first four years of school attendance are related to achievement more closely in the case of girls than boys.

The final hypothesis is based upon the proposition the girls succeed at school more frequently than boys. Thus, new supports for achievement are developed at school for girls.

4. Therefore, factors measured at kindergarten entrance are related to measures of achievement and adjustment at the end of third grade differently for girls than for boys.

Methodology.

The data set for the cohort of children assessed at the beginning of kindergarten and at the end of third grade contained scores for the following measures for approximately 300 white children, 150 girls and 150 boys:

1. Beginning kindergarten measures:
   Physical growth:
      Height in inches
      Weight in pounds
   Cognitive ability:
      Peabody Picture Vocabulary Test
      Cooperative Preschool Inventory
      Draw-a-Man test for perceptual motor skills
   Affective Measures:
      The Schaefer-Aaronson Classroom Behavior Inventory
      a. Extroversion vs Introversion

b. Social Behavior: positive vs negative

c. Task Orientation vs Distractibility

Academic Learning:

The CTB/McGraw Hill Tests of Basic Experience (TOBE):

a. Language

b. Mathematics

Socio-economic Status:

The Home Information Scale, a measure of educational advantages in the home environment.

2. End of third grade measures for the same children measured at kindergarten entrance:

Cognitive Ability:

The "CAT," Cognitive Abilities Test

Affective Measures:

The Self Observation Scales (S.O.S.) for the following variables:

a. Self Acceptance

b. Social Maturity

c. School Affiliation

Academic Achievement:

The Iowa Tests of Basic Skills tests for:

a. Vocabulary

b. Reading

c. Spelling

d. Math Concepts

e. Math Problems

The end of third grade testing was performed in 1974 under the supervision of the Research Division of the North Carolina State Department of Public Instruction as a part of a statewide educational assessment.

-- Table 1 goes about here --

Sample: The breakdown of all white children by sex groups appears in Table 1. Means and deviations for measurements at school entrance

of socio economic status, for physical growth (measures of height and weight), three measures of cognitive ability and two tests of knowledge of concepts are presented for these boys and girls.

The cohort represented the children entering kindergarten in the first full year of kindergarten operation in the public schools of North Carolina. September, 1970, was the entrance date.

The nature of school experience itself was as well controlled as would be possible given the fact that the children came from a total of 18 schools located across the state. The 18 schools made up a network of demonstration centers for an exemplary early childhood (kindergarten through third grade) program. Teachers for the kindergarten through third grade classrooms received in-service education, and extra funding was provided for operation of the two kindergarten classrooms per school. The original 720 children (18 x 40 children per school) who attended were selected as a stratified random sample of those who applied for attendance, and a control group of those not selected was also followed as a part of the program evaluation.

By the time all children in the third grade classes of the same schools were tested as a part of a statewide assessment program four years later, many of those who had entered as kindergarteners had moved from those schools and thus were lost to the data set. Further attrition occurred due to the fact that one or more items of data at one of the two levels was missing.

The data set for end of third grade testing for the 1970 kindergarten cohort contained complete information for 477 children, of whom the white girls and boys numbered a total of 298.

Data Analysis.

The Statistical Package for the Social Sciences was employed to obtain necessary analysis of the data. Achievement levels and scores for affective measures were obtained by appropriate breakdowns. Two methods of correlation of factors with achievement in third grade were employed: 1) the Pearson product-moment correlations; and 2) Multiple regression analysis.

Results.

Relating results to the research question of whether there are differences in the pattern of factors related to achievement has been approached by the separate hypotheses as stated above.

Hypothesis 1: Achievement level of boys at beginning of kindergarten does not differ from that of girls, but boys' achievement will have declined relative to girls' by the end of third grade.

The California Test Bureau/McGraw Hill Tests of Basic Experience (Form K) were administered at kindergarten entrance as a test to measure the children's learning at that point. Two of these tests, known as TOBE tests, were taken by the children in small groups during the first two weeks of school. These were the language and the math tests. We have used the scores of these tests as a measure of academic learning at the kindergarten level. White boys and girls had very similar scores: boys, 16.1 on language, 16.9 on math; girls, 16.4 and 17.0 respectively. Standard deviations were between 4.1 and 4.3.

Achievement tests available at the end of third grade were five subtests of the Iowa Test of Basic Skills: vocabulary, reading, spelling, math concepts and math problems. Means and standard deviations for

white boys and girls on these tests are given in Table 2. The differences in mean scores of boys and girls and t-values for significant differences are given there.

-- Table 2 goes about here --

Mean scores for boys on tests for reading and spelling were significantly lower than for girls, and the hypothesis was supported to that extent by these data. Boys' and girls' scores on the TOBE tests of academic learning at kindergarten entrance were almost equal. At the end of third grade, boys' achievement had declined relative to girls in some subjects tested, but not in all. Their scores were lower on the three tests in the language subjects and significantly lower than girls' on two of these tests. The sexes were not significantly different on the math tests.

Hypothesis 2: Affective measures indicative of satisfactory adjustment at school do not differ for boys and girls at school entrance, but girls' scores will be higher than boys' by the end of third grade.

For this type of variable, the measure employed for kindergarten entrance level was the Schaefer-Aaronson Classroom Behavior Inventory. This inventory is an instrument used by teachers for rating children on 60 behavior items. Scores are yielded for the three factors of Extroversion-Introversion, Social Behavior and Task Orientation. The measure for end of third grade was the Self Observation Scale, a paper-pencil test yielding scores on three scales, labeled Self Acceptance, Social Maturity and School Affiliation.

Means and standard deviations on these measures are presented for white girls and boys in Table 3. Differences between mean scores and t-values for significant differences are also given.

-- Table 3 goes about here --

The hypothesis was supported by these data. The girls' held a slight "edge" on boys at the beginning of kindergarten on two of the three Classroom Behavior Inventory factors, but the differences were not large enough to approach significance. By the end of third grade, girls were higher on all three of the S.O.S. scales, and the t-value for differences for Social Maturity and School Affiliation were significant beyond the .001 level and the .01 level respectively.

Hypothesis 3: Measures of different aspects of personality and behavior - cognitive ability and affective factors - at the end of four years of school attendance are related to achievement more closely in the case of girls than boys.

The data relative to this hypothesis were derived from correlations among the variables measured at the third-grade level. First, the Pearson product-moment correlations are presented in Table 4 for the third-grade cognitive ability measure (the CAT test) and the three scales of the affective measure, the Self Observation Scale, with the five different subject-matter areas measured by the Iowa Test of Basic Skills.

-- Table 4 goes about here --

The comparison of data for the two sexes in Table 4 indicates some similarity but also differences between them. The relationships between the third-grade cognitive ability measure and all achievement tests were very similar and very high ones. The sexes differ with respect to the degree to which affective measures were related to achievement, particularly the Social Maturity and the School Affiliation scales. Girls' correlations

between Social Maturity and all achievement tests were high, while boys' correlations even where significant were usually weak ones (.05 level). For School Affiliation, again girls' were all significant well beyond the .01 level, while boys' though not significant, were uniformely negative rather than positive.

Especially when all tests are of the same paper-pencil type which was the case with the third grade measures, it is necessary to go beyond the Pearson correlations and obtain partial correlations for the separate variables. A Multiple Regression analysis was performed with the same variables. The CAT (ability) scores were entered in the first step of the analysis, and partial correlations obtained for three affective variables. The resulting correlations are presented for the sexes separately in Table 5.

-- Table 5 goes about here --

It is clear from the data in Table 5 that while the Multiple R's for boys were higher than for girls, it is the ability measure which accounted for practically all of the variance in achievement for boys. No partial correlation with an affective measure was large enough to reach a .05 significance level. Four of the partials had F-values at approximately the .10 level, but as is indicated, three of the four were negative rather than positive. For girls, meanwhile, three of the partials were significant at the .05 level, and it is worth noting that six others were large enough to have F-values at approximately the .10 level. Meanwhile, the ability measure above accounted for less of the variance than was the case with boys on all five of the tests.

With respect to the hypothesis, therefore, the data indicate that for

girls, both cognitive and affective measures were correlated with all achievement tests, while for boys, achievement was related only to cognitive ability and there was no relationship with the affective measures included in these data.

Hypothesis 4: The factors measured at kindergarten entrance are related to measures of achievement and adjustment at the end of third grade differently for girls than for boys.

Several of the factors measured at kindergarten entrance were related to scores for four achievement tests and the Social Maturity scores from the Self Observation Scales by the Pearson product-moment method. These data for the white boys and girls are presented in Table 6.

-- Table 6 goes about here --

It is apparent that there were significant correlations between all kindergarten measures included here for boys with most or all four achievement tests and with the Social Maturity scale. In the case of girls, only the test of cognitive ability, the Peabody test, was correlated significantly with all four achievement tests. There was only one really significant correlation with Home Environment advantage. Significant correlations with the kindergarten affective (CBI) factors were much less frequent for girls than boys; these correlations were significant only at the .05 level.

The strong relationship present for boys between achievement scores and Social Maturity at the end of third grade and their socio-economic status, cognitive ability and affective factors as measured when they began kindergarten, simply was not present in the case of white girls.

Thus, girls and boys were found to differ as hypothesized.

Discussion of the findings.

The purpose of this study indicated at the outset was to explore the question of how different the experience of early school years actually is for boys, as compared to girls. Does the greater chance of success at school promoted by the good fit with school tasks of girls' sensory and motor equipment, as described by McGuinness, and the compatibility with school demands of the specifications of their sex role, according to Lee and Voivodas: does this lead girls to draw toward the performance of school tasks while boys come to avoid them? Does this mean that girls more than boys do learn successfully and that they are able to build at school the "sense of accomplishment" and avoid "inferiority" which Erikson postulates as especially important at this developmental period? And does all of this result in the fact that girls build emotional supports at school for their achievement, supports which do not exist for boys?

Specific hypotheses deriving from these questions have been proposed in this study in order to test some of these points with available data. The data set included measurements from the beginning and end points of the first four years of school for approximately 150 each of white boys and girls. The findings relative to these hypotheses have been presented in the preceding section.

To some extent girls did learn more, and relative to girls' achievement, boys' achievement did decline over the first four years of school in the language subjects. A decline did not occur in the mathematics area. On tests for "academic learning" at the kindergarten level for both language and math, the sexes performed equally well. On Reading and

Spelling tests at the end of third grade, the scores of girls were significantly higher than boys', and Vocabulary was higher but not significantly so. In the two Math tests at the end of third grade, the sexes were very nearly equal.

Scores on social-emotional factors also were not at all far apart at kindergarten entrance, but four years later the sexes were far apart on two of three affective-area variables: boys' mean scores were significantly lower than girls' on Social Maturity and on School Affiliation. Thus, boys did appear to have declined relative to girls on indicators of adjustment to school between their entrance into kindergarten and their exit from third grade.

We have seen that girls were significantly higher than boys on School Affiliation. Taking this together with their significantly higher scores on some tests, it seems appropriate to conceptualize thus: that through success experiences at school, girls build emotional supports for further achievement. Separate analyses were performed for boys and girls with third-grade data for the relationship of affective and cognitive factors to performances on achievement tests. For the boys, the cognitive measure was closely related to all achievement tests, but the affective measures were related infrequently and weakly. For girls on the other hand, the affective as well as the cognitive measures were consistently related, often rather strongly, to all of the achievement tests.

This researcher suggests that this difference in correlations with achievement at the third-grade level needs to be examined together with the results of the correlations between the various measures at kindergarten

entrance with third-grade achievement. In the case of the latter correlations, it has been shown that for boys there were much more frequent and stronger relationships between third-grade achievement and home environment advantage and the levels of cognitive ability and affective factors measured at the point of kindergarten entrance.

The interpretation proposed is that by the end of four years of school, girls had moved past the point of dependence upon the advantages with which they entered school. They apparently engaged themselves, "affiliated" with school perhaps because of more easy and frequent successes at tasks. Their third grade achievement scores were related to the level of affective factors as well as the cognitive ability measure at third grade level. It is proposed that these relationships represent supports in the school environment to girls' achievement from both the affective and the cognitive domains.

Boys, for whom only the cognitive ability measure is closely related to achievement at third grade, appear to lack affective supports. Their "school affiliation" score is much lower than girls'. The supports to achievement with which they entered kindergarten, including the level of advantage of home environment, are related significantly to third-grade achievement tests in their case perhaps because success at school tasks has occurred less frequently. Thus, the supports in the school environment have not been built.

Limitations of this study and suggestions for further research.

Many more questions have been raised than answered by this study. The results need to be checked with other data sets. In fact, this author

plans to use the data set from the Health Examination Survey to do just that to the extent that comparable variables exist. If these results are found to occur with other data for children between kindergarten and third grade, how about the years beyond third grade? And, how about the existence of differences between the sexes in groups other than white children?

It would seem particularly important to take a very close look by in-depth research at the nature of boys' experiences during the first and second grade when the demanding academic tasks are first presented consistently and seriously. In such a study one could look much more closely within the sex groups: which ones among the boys follow the hypothesized "boy pattern" of avoiding engagement with school tasks? -- which ones among girls do the same? What are the relationships of this to the development of the child's peer group relationships and sex role? Might there come from such research some opportunities to decrease the high incidence of learning disabilities in boys? Finally, there is the matter of the effects upon health of boys' poorer achievement at school. In a previous article this author has raised that question due to observed differences between the sexes in mortality rates, using those as an index of health status. These differences increase rapidly during the years children attend school.

By the time work is done on questions like these, the conspiracy of silence about sex differences at school should have disappeared, and perhaps more will be known about school achievement in general.

Table 1. Description of sex groups in the sample by means and standard deviations for socio-economic status and measures of physical growth, cognitive ability and knowledge of concepts at school entrance.

	Boys N=143		Girls N=147	
	Mean	S.D.	Mean	S.D.
SOCIO-ECONOMIC				
Home Inf. Scale*	44.5	10.7	42.6	10.5
PHYSICAL GROWTH				
Height, in inches	44.8	2.4	44.2	1.9
Weight, in pounds	44.7	7.0	42.5	6.0
COGNITIVE ABILITY				
Coop. Preschool Inv.	48.4	9.8	49.2	8.6
Peabody Vocabulary	53.0	8.2	51.8	9.3
Draw-a-Man**	8.7	4.5	9.4	4.4
CONCEPTS KNOWLEDGE				
TOBE*** Language	16.2	4.4	16.4	4.1
TOBE Math	16.9	4.4	17.0	4.2

* Measure developed by Learning Institute of N.C., Durham, NC (reported upon in Landsberger, Children Today, Vol. 2, pp. 10-14, 1973.)

** Scored by the Vane Kindergarten Test System.

*** CTB/McGraw Hill Tests of Basic Experience.

Table 2. Means and standard deviations for five achievement tests at the end of third grade for white boys and girls.

Note: The tests were Iowa Tests of Basic Skills.

Test	Boys (N-143) Mean	Boys (N-143) Standard Deviation	Girls (N-147) Mean	Girls (N-147) S.D.	d Girls Mean Less Boys'	Significant t-Value
Vocabulary	19.4	7.3	21.0	7.0	1.6	-
Reading	42.4	15.2	48.5	14.4	6.1	2.33 (.02)
Spelling	19.0	7.4	21.9	7.1	2.9	3.24 (.001)
Math Conc.	22.4	6.7	22.3	7.0	-0.1	-
Math Prb.	20.0	6.8	20.8	6.4	.8	-

Table 3. Mean scores on variables indicating adjustment at beginning of kindergarten and end of third grade for white boys and girls.

	Boys N=143		Girls N-147		d Girls' Mean less Boys'	Significant t-Value
	Mean	S.D.	Mean	S.D.		
KINDERGARTEN						
C.B.I. FACTORS						
Extra-Introversion	11.8	12.2	10.7	11.7	-1.1	-
Social Behavior	6.9	8.7	8.6	10.1	1.7	-
Task Orientation	- 0.1	10.2	1.6	10.2	1.7	-
THIRD GRADE						
S.O. SCALES						
Self Acceptance	47.8	10.7	49.9	9.6	2.1	-
Social Maturity	49.5	9.9	54.5	8.2	5.0	4.74 (.0001)
School Affiliation	42.8	14.1	47.0	14.7	4.8	2.6 (.01)

Table 4. Pearson product-moment correlations at the third grade level for cognitive ability and affective measures at the third grade level for cognitive ability and affective variables with performance on five tests of achievement for the sexes separately for white children.

ACHIEVEMENT TESTS	Cognitive Ability		AFFECTIVE VARIABLES					
			Self-Acceptance		Social Maturity		School Affilitation	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Vocabulary	.64	.64	.25	.29	.20*	.44	-.05^{NS}	.24
Reading	.65	.65	.21	.28	.19*	.44	-.06^{NS}	.27
Spelling	.49	.42	.16*	.14^{NS}	.10^{NS}	.28	-.05^{NS}	.21
Math Conc.	.72	.61	.20	.25	.29	.38	-.02^{NS}	.21
Math Probl.	.57	.43	.10^{NS}	.16*	.19*	.29	-.09^{NS}	.21

Note: N=Boys, 143; Girls, 147.

Correlations significant .01 level excepting for * = .05 level and NS = Non-significant

Table 5. Comparison of white boys and white girls on results from the multiple regression analysis of third grade achievement test performance with scores for cognitive ability and social-emotional variables of third grade level.

	Multiple R		Cognitive (CAT) entered in first step		Social-Emotional (S.O.S.) Variables Partial Correlations: Social Accept.		Social Maturity		School Affiliation	
	MR	F	R	F	r	F	r	F	r	F
White Boys - N=143										
Vocabulary	.68	21.	.63	101.	.13	NS				
Reading	.69	21.	.65	110.			-.10	NS	-.12	NS
Spelling	.53	9.	.49	46.						
Math Concepts	.73	28.	.72	161.						
Math Problems	.59	13.	.57	72.					-.14	NS
White Girls - N=147										
Vocabulary	.66	19.	.64	99.	.12	NS	.18	*	.13	NS
Reading	.64	16.	.61	86.	.12	NS	.21	*	.18	*
Spelling	.46	6.	.35	31.					.14	NS
Math Concepts	.63	15.	.61	86.			.11	NS		
Math Problems	.47	6.	.43	32.					.12	NS

Note: F-values for R's and MR's are significant .001 level unless indicated by * for .05 level or ** or .01 level or NS, Not Significant Levels of significance for Partial correlations are indicated by * for .05; ** for .01; partials with F-values at approximately the .10 level are included for informational reasons, and in those cases "NS" appears in the F column.

Table 6. Pearson product-moment correlations between kindergarten and third grade variables for white boys and girls separately.*

	Boys (N=143) Third Grade Measures				
Kindergarten	Vocab	Read	Spell	Math	Social Maturity
HOME ENVIRONMENT					
Home Inf. Scale	.37	.43	.35	.31	.19
COGNITIVE ABILITY					
Peabody P.V.T.	.28	.24*	.29	.33	.28
SOCIAL-EMOTIONAL					
CBI-Extroversion	.19*	-	.22*	-	.20*
CBI Task Orientation	.25	.27	.26	.24	.28

	Girls (N=147) Third Grade Measures				
Kindergarten	Vocab	Read	Spell	Math	Social Maturity
HOME ENVIRONMENT					
Home Inf. Scale	-	-	-	.27	-
COGNITIVE ABILITY					
Peabody P.V.T.	.39	.34	.20*	.20*	-
SOCIAL-EMOTIONAL					
CBI-Extroversion	-	-	-	-	.21*
CBI Task Orientation	.20*	.20*	-	-	-

*Note: All correlations are significant at .01 level excepting those with an asterisk, significant .05 level.

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